DOCUMENT RESUME

ED 226 630 HE 015 603

AUTHOR	Pile, Wilson, Ed.
TITLE	Massachusetts Higher Education in the Eighties: Manpower and the Economy. A White Paper. The Alden Seminars.
INSTITUTION	Association of Independent Colleges and Universities of Massachusetts.; Massachusetts Univ., Boston. Center for Studies in Policy and Public Interest.
SPONS AGENCY	Alden (George I.) Trust, Worcester, MA.; Ford Foundation, New York, N.Y.
PUB DATE	Jun 82
NOTE	43p.; For related documents, see HE 015 604-605.
AVAILABLE FROM	University of Massachusetts, Center for Studies in Policy and the Public Interest, The Library, Harbor Campus, Boston, MA 02125.
PUB TYPE	Collected Works - Conference Proceedings (021) -- Viewpoints (120)
EDRS PRICE	MF01/PC02 Plus Postage.
DESCRIPTORS	Adult Students; *College Role; *Continuing Education; Cooperative Programs; Economic Factors; Educational Change; *Education Work Relationship; Employment Projections; Futures (of Society); *Higher Education; Industrial Training; *Labor Force Development; Position Papers; *School Business Relationship; Staff Development
IDENTIFIERS	*Massachusetts

ABSTRACT

A position paper concerning the role of colleges and universities in corporate education, which was prepared for the Alden Seminar on Higher Education, is presented. In addition, a brief overview is presented of the April 1982 Alden Seminar meeting, which examined the current situation of higher education, particularly in regard to higher education in Massachusetts. In "The Interdependence of Employment and Education," Ernest A. Lynton considers the following areas: the importance of human capital, the rise of corporate education and training, the need for more academic involvement in corporate education, the need for change in colleges and universities as well as in employee training, the need for continuous manpower planning in view of uncertainties of the future, the implications of demographic changes, the need to broaden employee education to include liberal arts; and educational and policy issues that need to be addressed by higher education and business. Two projects to enhance business-education cooperation are also described: a brokerage mechanism for the Boston metropolitan area and an educational telecommunications network. Information is presented on seminar participants. (SW)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED226630

THE ALDEN SEMINARS

A WHITE PAPER

Massachusetts Higher Education in the Eighties:

Manpower and the Economy.

University of Massachusetts at Boston
in cooperation with
Association of Independent Colleges and
Universities of Massachusetts

HE 015 603

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

Univ of Mass
Center for Policy Studies

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☐ This document has been reproduced as received from the person or organization originating it.

☑ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official NIE position or policy.

Center for Studies in Policy and the Public Interest
The Library
Harbor Campus
University of
Massachusetts
Boston MA
02125

Independent and public higher education constitutes a major resource of the Commonwealth of Massachusetts and has a very significant total economic impact on this state. Industry is strengthened by this resource and the attributes of its higher education system help make Massachusetts an attractive place to live and work. Higher education has entered a dangerous decade characterized by inflation and escalating costs, declining resources, a precipitous decline in the traditional college age population, and the absence of rational planning in the public sector.

In recognition of these formidable problems, the University of Massachusetts sponsored a day-long working conference in March, 1981, seeking to address the most serious of these issues. This conference was attended by a distinguished group of educational leaders -- current and emeriti -- from both the private and public sectors. At the close of the session the participants were unanimous in saying that the dialogue begun should not be allowed to die. One and all saw the need for an on-going forum in which influential leaders from business, industry, and education might strive to create broad public awareness of these matters of such importance to the state. All agreed that there was a need to throw objective light on the place of higher education in the life of the Commonwealth and on what must be done to safeguard and strengthen it.

In order to create such a forum The Association of Independent Colleges and Universities of Massachusetts and the University of Massachusetts at Boston together applied to the George J. Alden Trust for financial support to organize a series of seminars to be held during 1981-82, in which a group of 20 educational, business, and industrial leaders would meet together to discuss substantial position papers dealing with major issues in higher education and to identify possible solutions for problems and areas for action. After each seminar the goal was to publish a "white paper" which would make a contribution to a better informed public and which could be useful to those entrusted with policy formulation. The Alden Trust awarded the grant requested, and Alden Seminars were held on November 19, 1981, January 14, 1982, and April 22, 1982. Outreach from these Seminars was greatly strengthened by an important Ford Foundation grant awarded the University's Center for Studies in Policy and the Public Interest which permitted the publication and dissemination of this and other Alden Seminar White Papers. We are grateful to The Alden Trust and to The Ford Foundation for their generous support.

University of Massachusetts
Amherst
Boston
Worcester

I am also taking this opportunity to recognize the wise guidance and many contributions provided the Seminars by my fellow steering committee members, Carl Gilbert, President and Frank A. Tredinnick, Jr., Executive Vice President, AICUM, and Dorothy Marshall, Commonwealth Professor Emeritus, UMass/Boston, and Coordinator for the Seminars. Recognition is also due the contributions of Wilson Pile, Policy Analyst of the Center, as editor of these White Papers, and the good efforts of Mrs. Sylvia Bengen and Mrs. Ella Minincleri in making the entire project work as smoothly and as expeditiously as it did. The first year of The Alden Seminars reflects both accomplishment and promise -- to all involved, far too many to continue enumerating, I express my thanks.

Franklin Patterson

Franklin Patterson
Boyden Professor of the University
and Director

June 1982

TABLE OF CONTENTS

Roster of Participants 1

Overview and Outcomes 3

Position Paper by Ernest Lynton 5

Appendices to Position Paper 30

Brief Biographies of Participants 33

PARTICIPANTS

James T. Amsler	President Salem State College
John E. Brooks	President The College of the Holy Cross
John W. Chandler	President Williams College
Robert A. Corrigan	Chancellor University of Massachusetts at Boston
Robert Cushman	Chairman of the Board The Norton Company
Carl Gilbert	President Association of Independent Colleges and Universities of Massachusetts
Avram J. Goldberg	President and Chief Executive Officer The Stop and Shop Companies
George W. Hazzard	Member Massachusetts Board of Regents of Higher Education
Joseph P. Healey	Chairman of the Board Refrigerated Food Express, Inc.
Jacob Hiatt	President Rand-Whitney Corporation
Elizabeth Kennan	President Mount Holyoke College
David C. Knapp	President University of Massachusetts
Roderick M. MacDougall	Chairman of the Board and Chief Executive Officer Bank of New England.

Dorothy Marshall	Coordinator Alden Seminars
Harold T. Miller	Chairman, President, Chief Executive Officer Houghton-Mifflin Company
Coleman M. Mockler, Jr.	Chairman of the Board and Chief Executive Officer The Gillette Company
Franklin K. Patterson	Director, Center for Policy Studies University of Massachusetts at Boston
David B. Perini	Chairman, President, Chief Executive Officer Perini Corporation
Edward E. Phillips	Chairman of the Board and Chief Executive Officer The New England Mutual Life Insurance Company
Herbert Roth, Jr.	Chairman of the Board and President LFE Corporation
Kenneth G. Ryder	President Northeastern University
Harold E. Shively	President Bunker Hill Community College
Frank A. Tredinnick, Jr.	Executive Vice President Association of Independent Colleges and Universities of Massachusetts
Robert C. Wood	Professor of Political Science University of Massachusetts at Boston

OVERVIEW AND OUTCOMES

On Thursday, April 22, 1982, the members of the Alden Seminar met for the afternoon at the Hogan Campus Center of the College of the Holy Cross in Worcester. Their purpose, in the third of three formal sessions during the academic year, was to continue to examine the current situation of higher education with particular reference to Massachusetts, and to act on the provisional agenda which was developed through the Special Session of the Seminar which was held on March 3, 1982, at the Harbor Campus of the University of Massachusetts at Boston. The Alden Seminar participants include chief executive officers of important business and industrial concerns in the Commonwealth, as well as chief executive officers from a representative range of the state's private and public colleges and universities.

At the beginning of this afternoon session, Seminar members heard a concise recapitulation of the Special Session by Father John Brooks, President of the College of the Holy Cross. His presentation was followed by the Program Session, which was moderated by Robert A. Corrigan, Chancellor, the University of Massachusetts at Boston. Ernest A. Lynton, Commonwealth Professor and Senior Associate, Center for Studies in Policy and the Public Interest, University of Massachusetts at Boston, reviewed highlights of the position paper he had prepared for the Seminar. This paper is presented as part of this White Paper. Substantial discussion followed D. Lynton's presentation—with particular emphasis on the desirability of human capital development, now the subject for a future Seminar.

The Business Session was chaired by Dorothy Marshall, Coordinator of the Alden Seminars. After discussion, the following statement on Fiscal Flexibility for the Board of Regents was MOVED and UNANIMOUSLY VOTED:

> The consolidation of the governance of public higher education in Massachusetts under a single Board of Regents requires, if it is to be adequately effective in serving the Commonwealth, assurance that the authority of the Board will be commensurate with its responsibility. Such was clearly the intention of the legislation that established the Board of Regents.
>
> Unfortunately, actions and events since the establishment of the Board have impaired the authority of that body to make its own policy determinations on fiscal matters, within an overall budget reviewed and approved by executive and legislative authorities. We consider this impairment to seriously endanger the very function for which the Board was created: statewide rational, cost-effective planning and direction of Massachusetts public higher education by a body independent of institutional and general politics. If fiscal decisions,

within a total approved budget for public higher education, are subject to arbitrary constraints imposed by the executive branch or the legislature, and if decisions about fiscal allocations to institutions and programs within such a budget are not under the Board's full control and free of political intervention, the integrity of good educational management and of education itself is compromised.

We therefore urge that the need of the Board of Regents to possess operating authority equal to its responsibility be recognized by the General Court and the Governor through clear endorsement of the principle of fiscal flexibility in all Board operations. It should be accepted by all officials concerned and again noted in law that, after the Board of Regents has presented its overall budget proposal and has received executive and legislative approval of a total amount for operating higher education in a given fiscal year, the Board possesses full authority under established standards of accountability to decide how and to what ends funds thus made available will be allocated.

There then followed discussion about a proposal to recommend the establishment of a Special Commission on Higher Education in Massachusetts. Rather than establish a separate Commission, the participants concluded that certain parts of this work should be undertaken by special task forces or subcommittees whose membership would extend to include non-Seminar participants. These subgroups would vary in exact size and composition, but as an example might include a chairman and two participants from The Alden Seminar, plus three other corporate/community leaders, plus another academic leader. Under this plan, support services and expert consultative assistance would be provided by the Seminar to the subcommittee.

It is expected that the following special topics will be undertaken for intensive study and reporting to the total Seminar by individual task forces or subcommittees:

- Human Capital and Higher Education Development
- Organizing for Private/Public Collaboration in Massachusetts Higher Education
- Massachusetts State Financial Policy Towards Public/Private Higher Education [to report in Fall 1983]

It was MOVED and enthusiastically VOTED to continue The Alden Seminars through academic year 1982-83 under its present directors, Dorothy N. Marshall, Franklin K. Patterson, and Frank A. Tredinnick, Jr. The Alden Seminar adjourned for academic year 1981-82 at 4:30 P.M.; informal discussion continued among those who remained for refreshments.

THE INTERDEPENDENCE OF EMPLOYMENT AND EDUCATION

Ernest A. Lynton

THE ALDEN SEMINAR IN
HIGHER EDUCATION

Co-Sponsored by:

The University of Massachusetts
and
The Association of Independent
Colleges and Universities of
Massachusetts

*This paper was prepared for the Alden Seminar on Higher Education. It is based on a study of the role of colleges and universities in corporate education which was supported by the Ford Foundation.

THE IMPORTANCE OF HUMAN CAPITAL

The interdependence of employment and education is a striking characteristic of our post-industrial society. Never before has the economic well-being of our country depended so crucially on the skills of employees who must have considerable pre-employment education with ample opportunities for continuing learning. Peter Drucker pointed this out already fifteen years ago in his remarkable book "The Age of Discontinuity".[1] He stated that

> "...knowledge has become the central economic resource. The systematic acquisition of knowledge, that is, organized formal education, has replaced experience—acquired traditionally through apprenticeship—as the foundation for productive capacity and performance."[2]

The developments since this was written have reinforced Drucker's point. By now, less than thirty percent of all employment is in the traditional production sector, whether at the primary level in agriculture and mining or at the secondary level in manufacturing. More than two thirds of all jobs are either in the service sector or in what the Princeton economist Fritz Machlup has coined the "knowledge industry": the enterprise of producing and distributing ideas and information.[3]

The century following the industrial revolution saw the production sector change from being labor intensive to being capital intensive as agriculture and manufacturing became mechanized. This process is continuing to a point at which steel mills, refineries and assembly lines are increasingly automated and even robotized with the virtual disappearance of manual labor. But at the same time the growing service sector has become skilled labor intensive and requires a substantial level of education even for entry level positions. The formation of human capital has become as important to this dominant portion of the economy as material capital formation had been to the traditional production economy. Never before has investment in people been so important to the strength of our economy.

Nowhere is this more true than in Massachusetts. The importance of a skilled labor force to the state has been pointed out most recently in the publications of the New England Board of Higher Education (NEBHE). Its Commission on Higher Education and the New England Economy recently issued a report entitled "A Threat to Excellence"[4] which addresses itself eloquently to the crucial economic importance of a strong educational system. In addition, NEBHE has published two related volumes: "Business and Academia: Partners in New England's Economic Renewal", and "New England's Vital Resource: The Labor Force."[4a] Both provide considerable documentation of the unusual regional concentration of jobs requiring a high level of skills. With less than 6 percent of the national labor force, New England has 16 percent of U.S. employment in computers, 14 percent in instrumentation

and 10 percent in electric and electronic equipment.[4b] In 1970, 16.6 percent of all employment in this region was in professional and technical fields, as compared with a national average of 14.8 percent.[4c] The corresponding figures for Massachusetts are likely to be similar or higher than the average for New England.

And indeed investment only in the formation of human capital is not enough. The "knowledge society" has brought with it—inevitably—a rapid acceleration of change. Technologies and techniques become obsolete at an increasingly rapid rate. In addition the impact of technology on society is bringing about profound changes in the ways in which we communicate, do business, obtain information and occupy our leisure time. As a result, the traditional sequential model of the relationship of education to employment is inadequate. We can no longer rely on first learning and then doing. Knowledge must be renewed and brought up to date on a continuing basis throughout employment in order for individuals to remain effective on the job and to cope with the everchanging environment. Thus increasingly the availability of lifelong educational opportunities becomes an economic necessity as important to the employer as it is to the employee.

It is astonishing how little this profound change in the nature and the purpose of continuing education has been perceived even—or perhaps especially—by the most fervent advocates of "lifelong learning" and the "learning society." Generally, adult education is still viewed as a private and voluntary activity benefitting the individual through personal enrichment or the potential for upward mobility. There exists as yet no widespread recognition that continuing education has become essential for job maintenance, needed to ensure collective productivity and economic return. As such, it is now a matter of concern to the employer and indeed an issue of public policy.

In view of these drastic changes in the importance of education one would expect unprecedented esteem and support for the system developed by society to meet its educational needs. Unfortunately, this is not the case. Higher education is in some disarray, facing a crisis of purpose which transcends the consequences of demographic changes and the downturn of the economy. It no longer appears to be fulfilling its role as the principal provider of education, and it is unsure about its mission and responsibilities.

THE RISE OF CORPORATE EDUCATION AND TRAINING

The rapid rise of corporate education and training during the past two decades provides a striking illustration of the statements in the preceding section: Drucker's point that the systematic acquisition of knowledge has replaced experience, the growing importance of continuing education in maintaining economic vitality, and the waning role of the traditional educational institutions in providing these needs.

Instructional programs for employees are not a new phenomenon. As far back as 1913 there existed a sufficient number of company schools to trigger an organization called the National Association of Corporate Schools. These schools focussed on vocational training together with the equivalent of an elementary school curriculum in basic skills. They were limited in size and scope. The primary method of worker education then and for several decades later continued to be apprenticeship and on-the-job training.[5]. Only in more recent years has the private sector seen the need to replace this with a substantial system of formal education and training programs.

The most reliable estimates of the total amount spent by business and industry on such activities lie in the range of $20 to $40 billion per year.[6]. The total of all fifty state appropriations for higher education added up to $23 billion in 1981-82.[7]. No more than about one fifth of corporate expenditures represents payment of tuition for courses and programs taken by individual employees in colleges and universities. The remainder is spent each year on programs sponsored directly by the employer and provided either by the company's own staff, by an institution of higher education under contract with the company, or by a non-collegiate organizer of training programs. A growing number of the latter by now makes up a flourishing training industry, itself a substantial component of Machlup's "knowledge industry". Its units range from small consulting firms to major enterprises such as the American Management Associations which occupies an entire office building in Manhattan and offers programs ranging from short seminars to a competency-based Master's program in Management.

Employer-sponsored education and training distinct from on-the-job apprenticeship clearly comprises a substantial effort which would not have come into being had there not been a widespread recognition of the importance of ongoing formal instruction to ensure continued employee effectiveness. The rise in these activities went largely unnoticed until the mid-seventies when it was described in an article written by two senior executives of IBM for a special issue of Daedalus devoted to American higher education.[8]. At about that time John Dunlop, then Secretary of Labor, coined the term "shadow educational system" to characterize activities existing in virtual isolation from the established academic institutions.[9]. The full extent of this was brought home by the first quantitative study of education in industry published by the Conference Board in 1977 [10].: it left little doubt of the existence of a major educational enterprise in which our colleges and universities were and are but little involved.

To some extent this is quite understandable and, indeed, inevitable. For obvious reasons, a substantial portion of the corporate programs is very job and product-specific. New employees must be oriented to the specific procedures and policies of their company and must become familiar with its products. When any of these change, there is need to update sales personnel as well as technical staff, and clearly all of this can best be done on the premises and by the company itself. At times such activities are limited to a few orientation sessions, at others they may consist of elaborate and complex

preparations for the launching of a new product line. For months prior to the distribution of a new category of computers, e.g., a major manufacturer will prepare what amounts to a whole curriculum of training materials for its sales force, service personnel and all others who will have to be familiar with the new product.

But on the other hand there is a great deal of employer sponsored education which resembles and in some cases is almost identical to college-level instruction, but which nevertheless involves no academic institution in its design or delivery. One indication of this is provided by two systematic and substantial undertakings to evaluate non-collegiate sponsored instruction and to suggest academic course and credit equivalents. One of these is conducted by the Board of Regents in New York State. Its 1980 Guide lists 1167 courses provided by 107 non-collegiate sources in the state[11]. The other is the American Council for Education which publishes a National Guide containing 1,000 courses offered by 101 non-education-l sources in 25 states.[12]. There is also the much-publicized but quantitatively less important trend toward formal degree-granting authority by professional associations, proprietary institutions and corporate units. And of course in addition to the full degree programs and course-length activities, corporations sponsor a very large number of shorter workshops and seminars with material resembling college offerings. There is, therefore, little doubt that a substantial portion of the corporate "shadow educational system" is similar to undergraduate or graduate level instruction. In principle much of this could be supplied by colleges and universities on a contract basis rather than by the corporations themselves or by third-party vendors.

It is therefore important to examine whether increased participation of academic institutions in corporate education is desirable, and if it appears to be, to identify the barriers to such collaboration. At issue is not whether colleges and universities can or should assume sole or even primary responsibility for employee education. It is inevitable that as the development and maintenance of human capital become more important, the responsibility for this task becomes increasingly disagreggated. No one system and no single set of institutions can or should retain the momopoly for education and training. There are highly legitimate and important roles for in-house human resource development and for a vigorous training industry. for one thing, there is the issue of scale: all of the advanced management and executive training programs currently existing in colleges and universities in this country could not handle the combined needs of the corporate sector. In addition, the location of many companies is not convenient to the principal concentractions of educational institutions. Modern educational technology may reduce the problems both of scale and location, but under no circumstances can one envision a situation in which business and industries rely entirely on academic institutions. At this time, however, they rely on them only to a very limited extent, and the question worth addressing is whether this reliance should and can be greater.

THE CASE FOR MORE ACADEMIC INVOLVEMENT

The considerable amount spent by the private sector on employee education is, of course, itself a strong incentive for colleges and universities at a time when they face shrinking enrollments of traditional college-age students, decreasing state and federal support and dire economic prospects. But should academic institutions pursue these corporate funds? Would they be selling their intellectual birthright for a mess of pottage and would this be an example of the danger to academic integrity when, as Boyer and Hechinger recently wrote: "...campuses turn themselves into educational supermarkets with a view toward mere fiscal survival?"[13].

The danger indeed exists if academic institutions become more involved in corporate education solely for financial reasons. But that is not at all the proper reason to move in that direction. Higher education must intensify its obligation to concern itself with the human capital and manpower needs of society. It has an inescapable responsibility, again to quote Boyer and Hechinger, "to transmit knowledge that would be useful, not merely in the classical sense of preparing gentlemen, but for the practical demands of a changing world."[14].

By and large, this has been the guiding principle of American higher education from its very inception. Harvard's education was initially designed, in large measure, as training for the ministry. Its classical curriculum was well suited for that, and even when not used as professional preparation, it had an eminently practical purpose. Oscar and Mary Handlin in their book on the American College observe that John Adams went to Harvard because "...(its) course of learning endowed those who completed it with the cultural attributes that were signs of superior status."[15]. What could be more career oriented than that?

In the second half of the nineteenth century, with the development of professional schools and the passage of the Land Grant Act of 1862, higher education became more explicitly a preparation for a career. It expanded in order to fill the human capital needs of increasingly sophisticated occupations in the growing manufacturing industries. Both enrollment patterns and curricula were more and more determined by manpower needs and market considerations.

One might have expected this trend to accelerate after the second World War, when this country quite consciously moved toward mass higher education as a matter of public policy. Indeed, the creation and rapid growth of the community college sector was characterized by strong ties to the work place and continuing adjustment to changing manpower demands. But in the senior institutions and particularly at the universities, the expansion resulted in an unexpected and dangerous decoupling from external needs. Instead, the growth of these institutions were mostly driven by internal consideration: they became their own dominant market. The enormous need of the burgeoning academy for additional faculty—intensified by the external growth of research

and development, first in science and technology during the post-Sputnik era, and later also in the social sciences during the post-Sputnik era, and later also in the social sciences during the Great Society years—caused universities to make doctoral studies and research their principal purpose. This had a number of consequences which combined to increase the isolation of academic institutions from the world around them and to reduce their effectiveness in meeting external human resource needs.

Undergraduate education in most fields, and most particularly in the arts and sciences, increasingly became a preparation for graduate work in these disciplines and that, in turn, preparation for vocations in scholarship and research. Curricular emphasis became increasingly theoretical and abstract, thought dissociated from action, and forgot Whitehead's dictum that

> "Education is the acquisition of the utilization of knowledge."[16.]

We have reached a point at which, by and large—and with some notable and important exceptions— advanced higher education focusses mostly on the acquisition of knowledge and no longer on the competence to use it.

This is reflected as well in the faculty reward system which is determined almost exclusively by internal values and priorities of the academic community. Emphasis is placed on only a single mode of scholarly activity: basic research leading to publication in scholarly journals directed at collegues in the profession. More applied work and other forms of disseminating knowledge, such as technical assistance and direct interaction with private and public sector users, have become downgraded. In addition, many faculty, particularly in the social sciences, believe that practical problem solving and policy making can be reduced to a scientific activity susceptible to their disciplinary methodology.*

This attitude both contributed to and was intensified by the changing nature of the faculty in higher education as it expanded to keep pace with institutional growth. Most of the new recruits to academic ranks were themselves a product of the post-war universities. They went through a narrowly specialized undergraduate curriculum designed as preparation for the graduate work and research into which they proceeded without interruption before assuming an academic position. As a result, the new faculty in many cases were not broadly educated and not particularly interested in fields other than their own. Furthermore they knew little of related professional activities and applied work outside of the academy, and were less and less able to help their students in the transition from the classroom to any job other than an academic one.

---

*A very interesting discussion of the limits of applicability of scientific methods to social problem solving is contained in Charles E. Lindblom and David K. Cohen, Usable Knowledge: Social Science and Social Problem Solving, New Haven, Yale University Press, 1979.

All of this has created a considerable divergence between higher education and the rest of society. Consequently, there now exists a real question as to the future role of higher education in meeting the country's growing need for a labor force which enters employment with real competence and maintains effectiveness through lifelong education. It is the basic premise of this paper that the purposes of higher education should again become related to external needs, for its own sake as well as for the benefit of society. A strong and responsive system of higher education as the major factor in human capital formation and maintenance is the best—indeed perhaps the only—way of assuring an appropriate balance of long range consideration with short term responses and of combining liberal breadth with narrowly oriented skills. It is the only mechanism which can combine the necessary degree of detachment with responsiveness to immediate pressures, and is the best guarantee of quality in the ever more important process of human resource development.

Thus the corporate sector and society at large would be better served by insisting on the necessary adaptations in the system of higher education so as to make it serve its human capital needs, rather than by continuing to expand its own alternatives. A greater role in employee education for colleges and universities will benefit all participants, and is not merely a matter of academic self-interest.

But for this to happen the academy must face up to the need for a number of profound changes in its procedures and methodologies, in its pedagogic approaches, and its relationship to the non-academic world.

THE NEED FOR CHANGE IN THE ACADEMY

Procedural Issues

The instructional needs of the corporate world are manifold, and require a wide range of program formats, from occasional seminars to extended full time residential programs. Some of the needs are predictable and repetitive, and can be planned well ahead of time; others arise unexpectedly and require a quick response. If academic institutions are to provide even a fraction of this broad array of educational services, they must develop considerable flexibility, adaptability and speed in their development and delivery.

With regard to program design, review and approval, colleges and universities must find a way which is intermediate between the traditional lengthy process and a "rubber stamp" alternative in which offerings are provided without any academic oversight. In addition, admissions and registration procedures must be streamlined and made more flexible.

Adaptability of time, place and format is so obviously necessary as to require little amplification. There are evident limits to such adaptability to which the corporate clients need to be sensitive, and it is also

necessary to examine the relative advantages of the convenience of an on-site location with the countervailing advantages of an on-campus program with access to libraries and with mixing of students from different backgrounds and occupations. A number of corporations have found that their employees prefer the latter even at the cost of considerable additional cost and time for travel. These are issues which need to be worked out in collaboration with industry.

The necessary flexibility and adaptability can be considerably enhanced by the proper application of educational technology. A great deal can be done by imaginative use of televised material, by cable, microwave transmission or physically transported video cassettes, coupled with the opportunity to question the instructor via telephone. The coming years will witness rapid development of computer assisted and computer managed instruction and the use of video discs. Properly used, these will considerably enhance the ability of a faculty to reach out to a wide variety of sites.

The flexible use of faculty is a complex issue. Corporate programs at present make only limited use of educational institutions, but rely to a considerable extent on their faculties as designers and instructors either on a direct consulting basis or as consultants to the external agencies used by the corporations. This raises a very basic and troublesome question: to what extent is this a parasitic and ultimately harmful use of the parent institutions of these faculty members?

When a corporation or a consulting firm employs a faculty member on a per diem basis, it obtains the services of this individual at marginal cost. There is no support for the indirect expenses of the institution which furnishes the faculty member with a basic salary, office and research facilities, health insurance and other fringe benefits. Should there not be come contribution to these expenses, just as there would be if the corporation contracted to have a research project carried out by the faculty member? At issue here is not the time honored privilege of faculty members to provide consulting services, but rather the question of whether this should be accompanied by some form of institutional support to offset the indirect costs.

There appear to be two principal reasons for the widespread use of faculty consultants in corporate education. One is the recognition that colleges and universities continue to be a major source of the new knowledge and techniques which professional and managerial employees need to absorb. The second reason, by contrast, is the quite negative one that it is so much simpler, quicker and burdened with less procedural hassle to turn directly to an individual faculty member rather than to deal with his or her institution, particularly for short term tasks.

Academic institutions urgently need mechanisms which would make faculty available on flexible basis while yet assuring some indirect cost return to the institution. A possible approach would be the development of a "practice plan" similar to those which almost every medical school currently uses for its clinical faculty. The institution collects fees for patient service, and—in most cases—returns to the faculty an amount which is calculated on a sliding scale. This maintains a substantial incentive and reward for the faculty member

while providing, as well, support for the institution. A number of engineering schools have established centers for technical consultations which provide for this, and such arrangements could be extended to include instructional services.

All of the procedural and graphical changes, however, will be of little value unless colleges and universities also make basic changes in pedagogy and in their relationship to the world of work.

Changes in pedagogy and attitudes

The New York Times and Fortune both recently carried articles discussing a major shortcoming of most engineering and business schools: they are too theoretical. An emphasis on abstract problems and research has replaced "hands on" experience and practical subjects. As a result, graduating engineers have great difficulty when first on the job and faced with the responsibility of turning out a product—they were not prepared for that.[17] An editoral in Science expresses the same warning, and suggests that engineering education model itself on medical preparation and include clinical training.[18] Employers in many fields indicate the same dissatisfaction: college graduates are inadequately prepared to function effectively on the job. Curricula are too theoretical and too abstract. Too few faculty members have had periods of activity in the world outside the academy. Graduates are by and large inadequately prepared to analyze and solve complex problems, requiring combination of disciplines and methodologies. Usually they also lack experience of working as part of a team.

There exists a serious need for more applied work, greater use of internships and other practical experiences, and an increase in cooperative education arrangements at the graduate as well as the undergraduate level. A few colleges and universities have pioneered such developments, including some institutions represented here, and they can serve as models for all others.

Fundamental changes are urgently needed not only in professional areas but also in the liberal arts. It is here that the impact of the curriculum becoming primarily a preparation for scholarship has been, in a way, most striking and most damaging. By and large we have rationalized the developments of the last decades by viewing the liberal arts as a purely intellectual pursuit, in marked contract to the "vocationalism" of professional curricula. Many attempts at curricular reform have been guided by this peculiar view. In 1973, a report reviewing liberal arts education at Princeton placed dominant value on "introducing students into the thoughtways of scholarship."[19] Most of the current discussions of education continue to talk about the importance of liberal arts for similar reasons. Again, the importance of learning how to utilize knowledge is forgotten. Too little attention is being paid to the essential role of the arts and sciences in providing an individual with greater competence to function on the job and as a citizen by a better understanding of the complex social, political, economic, historical and cultural context. The liberal arts are not an abstract antithesis to narrow vocationalism. They can and should be, instead, the broadening and leavening agent which transforms narrowly defined training for an immediate occupation into a more durable education for a long range career.

In short, colleges and universities, on the whole, provide inadequate preparation for the transition from theory to practice. As a result, many business and industries feel that they must devote excessive time and money on preparing new employees to be more effective in their jobs. Obviously this makes them more reluctant to turn to academic institutions for the continuing education needs of their employees.

This reluctance is reinforced by a pervasive belief that college and university faculty are not very good at teaching adults, particularly those who come to the classroom with a great deal of prior experience. There is too little attempt to capitalize on this and inadequate movement to a more inductive pedagogic approach which generalizes from experience. Designing and conducting a course of study for a group of middle managers in their late thirties is drastically different from teaching the traditional sophomore level course.

Some of these problems would be alleviated if academic institutions would learn to work together with industry in defining educational needs and developing appropriate content and format. Although in recent years there has been some movement toward real cooperation, the prevalent mode continues to be that a group of faculty in splendid isolation identifies what it believes to be an external need, designs what it considers to be the best way of meeting it—and then tries to interest individual as well as corporate clients. It is difficult and delicate to find the proper balance. On the one hand, constructive and lasting relationships are not likely to result if potential industrial partners are treated as outsiders whose task is to offer support without criticism. Their role is more than advisory: they must have a real share of the authority to shape content and format of the program for their employees. But on the other hand, the academy cannot relinquish its fundamental responsibility for the quality and standards of its educational programs. Finding the proper mode of cooperation will require that the corporate partner recognize this responsibility of the academic establishment, while the latter critically examine its own criteria so as to separate those which are intrinsically valid from those which are merely customary. There needs to be sensitivity and a willingness to be flexible and to share authority on both sides.

The current isolation of higher education from external realities and needs is reflected not only in the nature of the curriculum but also in enrollment and staffing patterns. On the whole colleges and universities shaped their growth and allocated their resources on the basis of internal priorities with little attention to serious manpower studies or careful exploration of societal and economic needs. As a result they were and often continue to be taken by surprise when major imbalances develop in supply and demand. This makes them very vulnerable to short term external pressures for quick solutions which often themselves turn out a few years later to have been miscalculated.

Neither curriculum development nor resource allocation can continue to proceed on an ad hoc and fragmented basis, nor can it be carried out by the academy in isolation. There is a critical need for a continuous and sustained process by which academic institutions, employers, unions and appropriate government agencies address themselves jointly to a long range view of human capital needs of the society.

THE NEED FOR CHANGE IN CORPORATE EDUCATION

Clearly the academy is overdue for some soul searching and serious self-examination if it is to play once again an important role in human capital development. However, the obligation for this does not rest on higher education alone. There are also serious issues to be considered by business leadership regarding the current corporate approach to employee training.

The Behavioral Emphasis

Substantial funds are spent on workshops, retreats and courses designed to make employees feel better about themselves and to be more effective in their relationship to others. The growing belief that quality of worklife, job satisfaction and personal fulfillment contribute to productivity seems well-founded, but serious attention needs to be paid both to the manner and to the extent to which this has come to dominate substantial portions of both in-house and vendor provided training programs. There is some danger that the corporate human resource development staff and the personnel of the training industry form a closed network reinforcing a strong emphasis on behavioral issues.

The Danger of Fragmentation

A much more serious set of issues is raised by the very short range and narrowly task specific nature of most employee training. Most corporations pride themselves in their ability to analyze even complex functions in terms of specific component skills, and then to design training modules for each of these. At a recent conference, e.g., the senior official in charge of personnel development for a major insurance corporation stated that in the data processing area—obviously a substantial component of his company's activities—he and his associates had identified 800 distinct competencies!

Task analysis is very important, and indeed one of the short-comings of academic education is its lack of attention to the component skills which are needed to be effective in a practical situation. But it is equally questionable to go to the opposite extreme because of the danger that training and education become totally fragmented and lose all coherence. Educational technology holds great promise, but also some considerable peril: it encourages the trend toward the quick fix for the immediate need, the slick package for each distinct skill. If this is carried too far, corporate education could become an aggregate of a large number of separate and disconnected pieces which train "how" without teaching "why?"

Without a reasonable understanding of more general principles, individuals who know only which buttons to push in order to produce certain results, without any real understanding of the process, are helpless in the face of breakdown or unanticipated events. The near-disaster at Three Mile Island brought this to everyone's attention in a rather frightening manner. But the modular approach becomes even more inappropriate if one can be certain that

the button and the black boxes will soon be obsolete and make way for unpredictable new gadgetry and new processes. Employees would then essentially have to be retrained from scratch because so little underlying knowledge can be carried over from the previous training.

This is wasteful and repetitious for the employer as well as the individual employee. As change accelerates and with it job content and nedessary skills, it beomes ever more important to make learning culumative so that overall understanding increases geometrically rather than linearly.[19]. Separate skill elements must be gtouped into more generic aptitudes, so as to build on what has been learned before and to anticipate future learning needs as much as possible.

Here again, dialogue and joint efforts of employers and academic educators can help to provide a measure of coherence and an overall pattern to the individual components of corporate programs. In this way the whole can be made greater than the sum of the parts.

The Need For A Long Range Perspective

The fragmented character of much employer-sponsored education appears to be a reflection of the lack of long range perspective in the corporate approach to employee development. Several very large corporations do have multiyear development programs through which promising young managers are groomed for eventual senior executive positions.[20]. Furthermore many companies have a fairly systematic series of programs designed for the successive bridge points as managers move from one level to the next. But beyond this, a great deal of employee training appears to be implemented in response to immediate needs.

Colleges and universities are, quite correctly, criticized by corporate officials for not being able to respond quickly enough to requests for specific training and education programs. As a result, companies tend to turn to non-collegiate vendors who provide an instructional package very quickly. But one can also blame the corporate sector for their tendency to identify so many of their needs at the last moment. More careful planning would give both users and providers more time for constructive interaction and thorough preparation.

The short term approach to corporate education reflects a real paradox. On the one hand larger companies have created extensive and sometimes sumptuous educational facilities. They develop voluminous training materials with sophisticated use of education technology. Many have elaborate personnel tracking systems with periodic evaluation of all employees. The personnel development system of major corporations has all the appearances of permanence and of careful planning.

This is also suggested by the recent change in nomenclature: almost every corporation now speaks of the management and the development of human resources. But there is little indication that human resources really have become a serious factor in long range planning. On the whole, recruitment and ongoing employee development seems still to occur on an ad hoc and reactive basis,

responding to immediate and short term needs. There are few if any major corporations in which the Vice President for Human Resources—by any title—is part of the senior management team engaged in strategic planning. In a sense these individuals appear to be as peripheral to the principal purposes and decision making processes of their companies as the Directors or Deans of Continuing Education are in most colleges and universities. And as a result, the corporate approach often lacks long range perspective. This may have increasingly serious consequences in view of the likely developments in the years to come.

A DIFFERENT AND UNCERTAIN FUTURE

The preceding pages show that the current interdependence of employment and education call for more dialogue and closer collaboration between the two sectors. In addition, the prospects of a different and uncertain future creates the further need for joint efforts by business and education—together with government—to engage in consistent, coherent and continuous manpower planning. A piecemeal approach has dominated such efforts to date, with the result that there is a crisis in one area today, and a new emergency in some other field tomorrow. It is high time to take into account all pertinent factors and to generate an integrated projection for all areas of human resource needs.

Any planning effort must be closely coupled to an equally collaborative and continuous dialogue about a number of fundamental educational needs, methods and strategies. Such a discussion is long overdue. There are at least three major issues which have substantial implications for everyone involved in human resource development, and which need to be explored by business and education together: the consequences of imminent demographic changes, the need for more breadth in career related education, and the inevitability of uncertainty.

The Implications of Demography[20].

Because of the aging baby bulge, society is about to face an unprecedented situation in which there will be, simultaneously, a population bulge in the middle years and a shortage of younger people. As we in higher education know only too well, there are today already 20% fewer individuals under 18 than a decade ago. This trough now affects high schools and is about to impact on colleges. It would also already be felt by those enterprises which usually hire high school graduates were it not for the current recession and high unemployment rate. Even with this, there appears to be a serious shortage in some skilled trades such as mechanics and sheet metal workers. In a few years, the post-bulge trough will have reached the mid-twenty age level. If by then the economy has at least partially recovered, there is likely to be a severe labor shortage at the traditional entry level in the service sector: sales and clerical personnel, health care workers as well as supervisory personnel and first level managers. If this is not anticipated well ahead of time, there will again be anguished outcries as well as

fierce competition for inadequate number of college graduates, much as we have witnessed recently with regard to high technology fields. With reasonable planning by both employers and educators, there exist alternatives which can be identified and pursued so as at least to alleviate the impending labor problem.

In the first place there is the pool of older individuals which make up the aging baby bulge. Many of them lack opportunities for promotion and are available for retraining into different occupations. This will not be easy, especially as it is likely to require lateral rather than upward movement, with little or no salary or status incentives. Ways will have to be found to accomodate this, and corporations will have to pay more attention to utilizing their existing work force to meet new needs rather than to rely on new hires. Some experts believe that current manpower shortages in the high technology industry could be alleviated if more of this were done: articles in Fortune and in the Boston Globe have suggested that in spite of the much publicized need for more engineers in certain fields, companies devote few resources to retraining their own technical personnel who are in outmoded areas.[21].

Another potential pool to augment the shrunken entry level age group consists of those who for various reasons are only able or willing to work on a part-time basis. This includes housewives, the elderly and some handicapped. Many of them can, of course, do so now, but if this cohort is to have a substantial impact on the future labor market, employers will have to develop flexible time schemes and make other accomodations. Any educational program for this group will also have to take into account its special needs.[22].

The consequences of demographic changes will create another serious challenge for employers. As was already mentioned in passing, the majority of middle age, middle level employees are already beginning to find little or no room at the top.[23]. The upper levels of most organizations are filled with relatively young individuals who joined the staff at the beginning of the years of growth and prosperity—in the business world just as in the academy. These people at the top are nowhere near retirement. They clog the path for upward mobility for the many who are behind them, in the middle levels of the hierarchies. As a result most businesses must address themselves to the educational as well as the emotional needs of those who will be staying at these intermediate levels perhaps for twenty years or more. Their continuing effectiveness and vitality should be of paramount importance to their employers. Until now little attention has been paid to their developmental needs. The principal emphasis of employer-sponsored education has been on upward mobility, with programs geared to prepare individuals to cross from one level to the next. Not only content but also attitudes and value systems implicit in corporate education will have to change substantially. There will have to be rewards other than promotion. One possibility which has been raised is increased participation in decision making. This is consistent with some recent developments in organizational patterns such as matrix management,[24]. and is becoming much easier through computerized information systems with terminals at every desk. Obviously such broader involvement in decision making has substantial educational implications.

No discussion of the common concern of employers and educations with human capital issues can ignore one further matter. If demography and an economic upswing combine in a few years to create a shortage of qualified, adequately prepared young people for first-time employment, we are likely to be faced with the spector of simultaneously having such a shortage together with an unskilled, unemployable underclass concentrated mostly in the cities and consisting of a high percentage of native and immigrant minorities.[25]. That group exists now, with youth unemployment twice the national average, but its problems and at times even its existence tend to fade into the background of the national recession and general malaise. But once the majority of the country regains prosperity and full employment, all of us, government, employers and the educational system, will face an issue of extraordinary gravity to which we must address ourselves without delay.

In particular, this is an issue which requires the coordinated and cumulative efforts of business, higher education and the school system. Obviously there is a critical need to improve the quality of secondary education and the City of Boston has a number of promising examples of tripartite cooperation to this end. But in addition it may be appropriate to seek alternative patterns of schooling and work, as part of which unskilled young people would be able to pursue further education while holding a full time job.

The Need for More Breadth

In the years to come, both career preparation as well as continuing employee education should be substantially broadened and include a considerable measure of liberal arts because of three concurrent factors:

---corporations, like academic institutions, cannot function in isolation from their social, political and economic environment and cannot ignore historical and cultural factors. There matters will increasingly have to be considered even in relatively small scale decisions by professionals and managers.

---the environment itself is becoming more complex and subject to change.

---there is a marked trend toward decentralization of decision making in management, as well as some movement toward worker involvement, so that the need for a broader understanding of issues will become increasingly pervasive at all employment levels.

The three factors combine to make it more and more important that professionals and managers at all levels, and to some extent also non-managerial personnel, understand and consider the variety of opportunities as well as risks which accompany the developments of strategies, plans and policies. More and more

employees will have to be aware of and consider external factors as well as the interests, sensitivities and likely reactions of the various constituencies which may be affected. Furthermore, they need to become much more knowledgeable about how external opinions and decisions are formed.

The need for this is beginning to be recognized by the business community. It is the subject of a recent study by the Conference Board, entitled, somewhat misleadingly, "Managerial Competence: The Public Affairs Aspect."[26] Part of the study focusses on the traditional components of "public affairs": the skill in communicating company policies and views, the ability to negotiate and interact effectively with outside individuals and groups and the importance of projecting a favorable image through good relations with the community.

But the principal emphasis is on the importance of enhancing managerial knowledge and understanding in two areas:

> "The first is knowledge of society, and embraces large areas of social, political and economic theory, history, ethics and current events."
>
> "The second....is the public policy process." [27]

These needs have obvious implications for the content both of preparatory, pre-employment education as well as of the continuing development of employees. Both should clearly involve a substantial component of the liberal arts, assuming that these are recognized and taught as concrete ways of enhancing an individual's understanding of his or her society, rather than as purely abstract methodologies.

Although the Conference Board study does not mention this, there is growing need also to provide some measure of technological and scientific literacy. Just about every activity and decision in business is affected in some fashion by technical and scientific issues and require some assessment of these factors. Those charged with decisions will in most cases have to invoke the expertise of specialists, but unless they have some degree of literacy and some understanding of the basic principles and issues involved, they will find themselves at the mercy of these experts, unable to exercise any judgment with regard to their advice.

The Sloan Foundation has begun to address the importance of viewing technological literacy as an essential part of liberal education. A recently published 'occasional paper'[28] contains comments by various authors on this issue. One of them, Elton Morrison, Professor Emeritus at MIT, not only singles out Worcester Polytechnic Institute as a college which "has come closer to fullfilling the Foundation's design for a truly liberal education for today than any other (place)...", but provides as well an extraordinarily clear statement of the relationship of liberal education to contemporary issues. He defines the organizing principle for this education as

> "...what one needs to know (and) to understand the new situations existing in society and to reach resolving decisions on what to do about them."[29]

There is yet another major component consistent with Morrison's definition which to date has not been adequately recognized nor incorporated in the design of employee education: the need to have some understanding of other cultures and traditions, and the advantages of having one or more foreign languages. To some extent this has been stressed by statements and reports such as that of the recent President's Commission on Foreign Language and International Studies,[30] but the focus has been on the internationalization of business. Little attention has been paid to the important fact that our own country is becoming increasingly multicultural and multilingual.

We know, by now, that the disparage ingredients do not completely melt in the national pot and that ethnic heritages, cultural patterns and language differences persist. Even if everyone does learn to use English it remains no more than a linqua franca for large portions of the population. Particularly in the service sector, individuals involved in direct interaction with the public increasingly need to gain a deeper understanding of the heterogeneity of their customers. This provides substantial opportunities not only for language instruction but, perhaps more importantly, for programs which offer cross cultural perspectives.

Just enumerating these various components which should be incorporated both in career preparation as well as in ongoing employee education clearly establishes the need for changes on both sides and for collaboration. On the one hand employers need to take a broader view of the educational needs of their employees. They must not only accept but indeed insist on the inclusion of pertinent material in college curricula as well as in their own education programs. On the other hand, these cannot be provided in the usual academic fashion. Our current way of teaching is to begin each subject with the most basic principles and to move slowly to their applications by way of an exhaustive and often exhausting enumeration of every pertinent detail. Many years ago, a physicist described a mystery novel as written by a scholar: it begins with chapters on the origin of law in Babylon and the Sinai, the history of the U.S. constitution and the development of our judicial system, followed by further descriptions of police procedures, forensic medicine and the laws of evidence, until the fifteenth and final chapter at last describes the crime. The solution is left to the reader.

We must find ways of providing a degree of literacy in a field, be it in the social sciences, physics or ethics, which avoid the two extremes: complete and detailed exposition on the one hand, and "quick fix" approach on the other. We must seek an intermediate approach which is both intellectually sound and at the same time imparts adequate understanding in a limited time.

Preparing for Uncertainty

The uncertainty of the future intensifies the already urgent need for ongoing cooperation between business and higher education. Together, the two sectors must develop and maintain a long range perspective on human capital needs through a joint planning process. They must also address themselves together to a number of basic educational and policy issues.

The most systematic, and most thorough and the most complete efforts at projection and planning are, at best, limited in their ability to predict the future. There are too many variables and too many factors which cannot be anticipated. Indeed, the only certainty is continuing and accelerating change, only the general outline and direction of which can be predicted. This obviously requires that any planning process be a rolling and continuous one, in which projections are continuously refined and corrected on the basis of evolving data. But it has, as well, important and basic implications for the content and pattern of education.

The inevitability of the unexpected reinforces the need to strike a proper balance between general understanding and specific skills, both in preparatory and on-the-job education. At every stage there is a need to prepare both for the specific needs of the moment as well as to provide a degree of adaptability to the changing demands of tomorrow. At this time, neither higher education and the business world take the correct approach. Academic programs are too general and too abstract. They fail to prepare adequately for short term utilization of knowledge, and it is not clear that they really provide the proper foundation for continuing readjustment. At the same time, it is very much in the interest of the employer to lessen the degree of specificity and to broaden the content of employee education so as to make it more cumulative and to enhance the ability to deal with unexpected changes.

An ever changing and uncertain future also reinforces the need to develop a coherent approach to a lifelong and recurrent pattern of education. We must examine both the content and the format of the initial, pre-employment stages of higher education if they are to provide a basis and first step to such a continuing process. On the whole very little thought has been given in this country to the pedagogic implications. One aim of higher education has always been to inculcate a spirit of inquiry and the joy of knowing. Those are needed and important, but hardly adquate to the situation. We must go further and ask what the content should be of the first stage in order to prepare individuals both for initial employment as well as for the continuing process of formal education. Should the current time pattern be changed? Should we institutionalize and make into the norm the current trend toward "stopping-out"? A growing fraction of students, particularly at the graduate level, interrupt their studies for various periods of time, usually for financial reasons. But this may have great pedagogic advantages as well—indeed a number of business schools have begun to give preference for admission into MBA and other advanced programs to individuals who have had some years of practical experience.

We need, as it were, to blur the distinction between pre-employment education and the further stages of development which every individual will require. We need to move toward seeing the process more and more as a continuous one, in which each stage builds on the previous ones and provides a new degree of fine tuning to current knowledge needs. With that mind set one can then pursue de nova, without preconceived notions, how higher education should be patterned.

There is a need, as well, to blur distinctions of another kind: that between the faculty in colleges and universities on the one hand, and the professionals in business and industry on the other. More interchange between

them, and particularly more opportunities for academics to spend some time at the work place, will be very useful in breaking the reciprocal isolation and lack of understanding. But it will be necessary to go beyond this. There is no way, with the best possible planning and optimal flexibility, that academic institutions will be able to keep pace with manpower demands in the light of inevitable surprises. Time and again there will be an unanticipated need, either in kind or in scope, to which a college or a university cannot completely adjust by using only its own faculty or its own facilities. There already exists in computer science and other high technology areas of acute shortage of qualified faculty, and no scheme of increased salaries and other incentives can change that. Business and higher education will have to work out systematic ways of using corporate professionals on a part-time basis to augment instructional resources, and to use industrial facilities and equipment to stretch inadequate institutional resources. This cannot be left to individual initiative but must be institutionalized through discussions and planning at the highest level.

SUGGESTIONS FOR ACTION

Throughout the country there exist many examples of cooperation between the corporate world and the academy in employee education. In the absence of a systematic survey one can only guess at the number of bilateral arrangements through which some college or university provides short courses, credit offerings or whole degree programs specifically designed for a group of employees of one or more enterprises. There must be hundreds of those, or perhaps even more, and also a considerable number of collective arrangements, involving consortia of educational institutions and/or groups of corporate clients. Appendix A contains brief descriptions of two such projects which are currently being developed in this area. One is a statewide telecommunications network which would greatly facilitate the delivery of educational programs to in-plant sites, and also make it easier to use industrial employees as instructional resources for the campuses. The second is a business-education brokerage mechanism for the Boston metropolitan area.

Such efforts should be encouraged and multiplied in many ways and many places. But in addition there is a paramount need to go beyond such operational linkages. These are usually developed and implemented through cooperation between the intermediate echelons of corporate and institutional hierarchies. The exploration of basic issues of attitude and approach on both sides such as have been mentioned in this paper, and the commitment to a cooperative and systematic approach to long range manpower planning can occur only under the auspices of and with the close involvement of corporate and academic leadership. Because of this, the ongoing attention of the Alden Seminar to these matters can be of the utmost importance.

The recent NEBHE report cited earlier[31] stresses the importance of education to the economy of New England and emphasizes the need to strengthen both secondary and higher education. But it touches only peripherally on the equally urgent need to establish and also to maintain substantive, policy-

oriented communication between business and education with regard to human capital, as outlined in this paper. The communication must involve the highest level of both sectors and include, as well, policy makers in government and labor.

The Alden Seminar, therefore, is in a unique position to bring this about in Massachusetts and thereby to create a model which could spread throughout the region. Building on the background of widespread interest generated by the release of the NEBHE report, the Alden Seminar should consider the development and dissemination of a White Paper on Human Capital, containing a synthesis of pertinent papers and discussions which have taken place during this year in the Seminar sessions. The purpose of the White Paper would be:

---to raise the awareness at the highest levels of state government, business and higher education to the communality of interest in, and the importance of cooperative efforts toward the optimal formation and maintenance of human capital;

---to encourage the further development of bilateral as well as collective efforts to enhance business-higher education cooperation in employee education;

---to encourage, as well, the strengthening of trilateral ties between business, higher education and the school;

---to stimulate discussion, further study and possible action with regard to necessary changes both in preparatory and in-service education.

In addition and as its most important component, the White Paper on Human Capital should contain a specific recommendation with regard to mechanism to address itself to the crucial issue of long range manpower policy and planning for the Commonwealth.

The Alden Seminar, in the White Paper, should recommend the creation, by gubernatorial appointment, of a permanent Massachusetts Human Resource Planning Commission consisting of leaders of business, higher and secondary education, labor and government. The Commission should have the mandate and the necessary funding and staff so as to

---identify, assemble and analyze the necessary information and data bases for a truly comprehensive and iterative process of projecting human capital needs for the Commonwealth;

---assess, as well, the educational and skill development needs arising from anticipated changes in job content and environmental factors;

---explore and analyze optimal ways of meeting the totality of resulting human resource development needs by combinations of retraining of existing employees and preparing new entrants into the work force;

---recommend periodically how the resources of education and business can best be combined so as to keep pace with evolving and changing needs for education and training;

---analyze pertinent public policy issues and make recommendations as appropriate.

This Commission clearly needs to have a close working relationship with the Board of Regents and have a strong input into the Board's mandated responsibility to generate and to keep current a statewide Master Plan for higher education. Yet there are advantages for keeping a degree of separateness and autonomy for the Commission. It needs to deal, at least to some extent, with secondary as well as with higher education. In addition, it should be in a position to make recommendations with regard to a variety of fiscal matters as well as other policy issues, and these would have maximum impact coming from a quasi-independent, disinterested body.

An example of a basic policy matter to be pursued is whether a coherent planning process for the state is to be advisory or whether it should provide the framework for regulatory activity. The Board of Regents currently has program review responsibility for the public sector of higher education, which provides a regulatory mechanism for this component. Is this sufficient in a state in which over half of higher education is provided by independent institutions? And if not, should the Board have equivalent review and approval powers for all colleges and universities?

A systematic move toward a lifelong pattern of formal education raises another set of public policy issues. What are the limits to a public responsibility for subsidized, low cost education? Does it extend to any aspect of post-employment education? Should there be tax policies to encourage corporate investment in employee education? How can one encourage such investment in view of the fear by some private enterprises that their investment be lost when trained employees move to another company?

Not all of this need to be tackled all at once. Some policy and pedagogic issues can be kept in abeyance, and a full fledged planning effort cannot be created overnight. But the process must be started now. The interdependence of employment and education is growing. A determined common effort is overdue to lower the barriers to cooperation and to develop a joint approach to the demands of the future. The Alden Seminar can make a major contribution to this by bringing about the creation of a Massachusetts Human Resource Planning Commission.

REFERENCES

1. Peter F. Drucker, "The Age of Discontinuity", New York, Harper and Row, 1968. Paperback Edition, 1978.

2. Drucker, op. cit., p. 40.

3. Fritz Machlup, The Production and Distribution of Knowledge in the United States, Princeton, Princeton University Press, 1962, chap. X.

4. A Threat to Excellence, Report of the Commission on Higher Education and the Economy of New England, Wenham, New England Board of Higher Education, 1982.

4a. Business and Academia: Partners in New England's Economic Revival, John C. Hoy and Melvin H. Bernstein, eds., Hanover, University Press of New England, 1981; New England's Vital Resource: The Labor Force, John C. Hoy and Melvin H. Bernstein, eds., Washington, American Council on Education, 1982.

4b. John C. Hoy, An Economic Context for Higher Education, in Business and Academia, op. cit., p. 15.

4c. Peter Doeringer et al., Market Influences: A Perspective for the 80's, in Business and Academia, op. cit., p. 36.

5. Bernice M. Fisher, Industrial Education: American Ideals and Institutions, Madison, University of Wisconsin Press, 1967, p. 110

6. Robert L. Craig and Christine J. Evers, Employers as Educators: The Shadow Educational System, in Toward Higher Education and Business Alliances, Gerald G. Gold, ed., New Directions for Experimental Learning. San Francisco, Jossey-Bass, 1981

7. Chronicle of Higher Education, XXIII, No. 8, p. 13, October 21, 1981

8. Lewis M. Branscomb and Paul C. Gilmore, Education in Private Industry, in Daedalus, Winter 1975, p. 222.

9. John T. Dunlop, as quoted in Human Resources: Toward Rational Policy Planning, Conference Board Report #669, New York, 1975.

10. Seymour Lusterman, Education in Industry, Conference Board Report #719, New York, N.Y., 1977.

11. A Guide to Educational Programs in Non-Collegiate Organizations, Program in Non-Collegiate Sponsored Education, the University of the State of New York, Albany, 1980.

12. The National Guide, Program in Non-Collegiate Sponsored Education, the American Council on Education, Washington, 1980

13. Ernest L. Boyer and Fred M. Hechinger, Higher Learning in the Nation's Service, The Carnegie Foundation for the Advancement of Teaching, Washington, 1981, p. 58.

14. Boyer and Hechinger, op. cit., p. 9.

15. Oscar Handlin and Mary F. Handlin, The American College and American Culture--Socialization as a Function of Higher Education, New York, McGraw-Hill, 1970, p. 10.

16. Alfred North Whitehead, The Aims of Education, New York, Mac Millan Co., 1929, p. 6.

17. Why Engineering Deans Worry A Lot, in Fortune, January 11, 1982, pp. 84 ff.; cf. also Fred M. Hechinger, Business Schools Criticized, in The New York Times, April 13, 1982, p. C1.

18. Lessons From Medical Schools, in Science, 215, 1461, March 19, 1982.

19. Commission on the Future of the College, Princeton, Princeton University Press, 1973.

20. cf., e.g., Ruth G. Shaeffer, Staffing Systems: Managerial and Professional Jobs, Conference Board Report #558, New York, 1972

21. Fortune, loc. cit.; Keeping Track of the Engineering Shortage, in The Boston Globe, December 15, 1981, p. 40.

22. cf., e.g., Jane Shore, Alternative Work Patterns: Implications for Worklife Education and Training, Washington, National Institute for Work and Learning, 1980.

23. For a story on a study of this, cf. AT&T: The Hopes of Middle Managers, in The New York Times, March 21, 1982, p. F2.

24. cf., e.g., Allen R. Janger, Matrix Organization of Complex Businesses, Conference Board Report #763, New York, 1979.

25. cf., e.g., Critical Issues for National Urban Policy, Committee on National Urban Policy, National Research Council, Washington, National Academy Press, 1982, chap. 3.

26. Seymour Lusterman, Managerial Competence: The Public Affairs Aspects, Conference Board Report #805, New York, 1981.

27. Lusterman, op. cit., p. 5.

28. The New Liberal Arts, An Occasional Paper from the Alfred P. Sloan Foundation, James D. Koerner, ed., New York, Alfred P. Sloan Foundation, 1981.

29. The New Liberal Arts, op. cit., p. 16.

30. Strength Through Wisdom, Report of the President's Commission on Foreign Languages and International Studies, Washington, Office of Education, 1979.

31. George Masnick, Demographic Influences on New England's Labor Force, in New England's Vital Resource: The Labor Force, op. cit., pp. 36-64

APPENDIX A

PROJECTS TO ENHANCE BUSINESS-EDUCATION COOPERATION

In addition to many bilateral relationships and other examples of cooperation between business and education in employee training, two projects are currently in the planning stage which, if successful, will significantly enhance joint efforts.

A Brokerage Mechanism

The Commonwealth is unique in the number and variety of colleges and universities and has, as well, an unusual concentration of businesses and industries requiring a great deal of employee development. These characteristics, of course, provide a major opportunity for business-education collaboration, but they are, paradoxically, also a source of difficulty. The sheer numbers of prospective providers and potential users of instructional programs are so great that it is difficult for any one institution or any one enterprise to know where to start in developing relationships. This is particularly true for smaller colleges and smaller businesses.

With this in mind, Vice President James Howell of the First National Bank has been instrumental in triggering the exploration of a brokerage mechanism which would help to bring together business and education in the Boston metropolitan area. The project is jointly sponsored by the Council for Northeast Economic Action and a number of educational institutions, including the University of Massachusetts, Northeastern University, Boston University, Simmons College and Bunker Hill Community College. An Advisory Group of representatives of these and a number of other colleges and universities and of several major employers in the region is currently working with a full time staff person in what is basically the feasibility and planning stage.

In its initial stages, the brokerage is likely to concentrate on bringing about working relationships at the operating level and to provide three benefits: market access, reciprocal information and market aggregation. With regard to access, it is clear that the brokerage can help both educational institutions and employers to make initial contact, and this is likely to lead to savings in cost and energy on both sides as compared with individual approaches. The brokerage can also establish relationships between types of institutions and categories of employers who may never have communicated before and are very unfamiliar to each other. It is quite possible, for example, that a personnel manager of a bank who is quite familiar with the regional business schools is at a loss as to the best source for programs in English as a Second Language.

The ability of the brokerage mechanism to make useful connections between potential providers and users of course depends on its ability to accumulate and make available information about available resources, on the

one hand, and existing needs, on the other. One of the first steps would be to accumulate as complete an inventory as possible of institutional strengths and enterprise requirements in this region.

In addition, brokerage can help businesses to place small numbers of employees with those of other enterprises having the same educational needs, encourage colleges to develop programs which would not be justified for a single client and also to encourage them to pool resources when the needs of a single employer exceeds the capability of a single institution in terms of numbers or in terms of scope.

With a track record of success in bringing about more cooperation at the operational level, and as participants from both sectors get to know each other better and have reached a reasonable level of reciprocal confidence, the brokerage mechanism can lead to a more systematic dialogue involving the policy and planning issues described in this paper.

An Educational Telecommunications Network

President Knapp last year appointed a Commission on Telecommunications which is developing a plan for a state-wide, multipurpose communications network for educational and information services. The Commission is currently working on the technical, financial and organizational data and expects to complete its report this summer. Legislation is being introduced to create and fund a Massachusetts Corporation for Educational Telecommunications which would be responsible for the development and operation of the proposed network.

As envisioned in the Working Paper issued by the Commission last summer, the network would consist of a kind of electronic pipeline going along the length of the state from Boston to Pittsfield, with spurs as necessary into the northeastern, southeastern and southwestern corners of the state. This pipeline is most likely to be a high frequency, point-to-point microwave system, with a number of channels capable of providing two way transmission for video as well as voice, radio and digital signals. Regional distribution systems would link the pipeline at several nodes both to local cable systems as well as to receivers at factories, businesses, schools and libraries.

The network is envisioned as a common carrier, available to all institutions and agencies, public and private, interested in transmitting educational and cultural programs and providing access to data and other information. It will be able to enhance substantially the possibilities for business-education cooperation of varying kinds. It has great potential for on-site educational programs and provides this opportunity to any one of the many colleges and universities in the state, and also to any of the large number of employment sites. In addition, the network can greatly increase the availability of information and technical assistance to business and industry, as well as, of course, to government agencies and other users. It

will provide them with ready access to many libraries and journal collections throughout the state and, with the availability of facsimile transmission and teletext through the network, will be an extraordinary method for cost-effective information retrieval. In addition, the network will also make it easier for a professional in business and industry to provide instruction and information to students and faculty on the campuses, and thus encourage the reverse flow of instruction and expertise which will be increasingly needed in the future.

A very successful prototype of such a network has existed for several years in the Dallas-Fort Worth region. It links many of the region's high technology and other industries to seven public and private academic institutions, in addition to connecting to all of the regional school systems, many hospitals, and other agencies. This network, called TAGER, has become self-supporting after a few years through a combination of membership and user fees, and this is envisioned as well for the proposed Massachusetts configuration.

ALDEN SEMINARS

PARTICIPANTS

JAMES T. AMSLER

James T. Amsler is President of Salem State College. He has also served as President of North Adams State College and as Associate Director of the Division of Massachusetts State Colleges.

JOHN E. BROOKS

John E. Brooks, S.J. is President of the College of the Holy Cross, where he previously served as Vice President and Academic Dean. A graduate of the College of the Holy Cross, he also attended Boston College and Gregorian University.

JOHN W. CHANDLER

John W. Chandler became President of Williams College in 1973. Prior to that he served as President of Hamilton College. He is Chairman of the Executive Committee of A.I.C.U.M. and has served as President of the New England Association of Schools and Colleges.

ROBERT A. CORRIGAN

Robert A. Corrigan has been Chancellor of the University of Massachusetts/Boston since 1979. Previously, he had been a Provost at the University of Maryland, and before that Dean of Arts and Sciences at the University of Missouri/Kansas City. A graduate of Brown University and the University of Pennsylvania, he has been a member of the faculty of Bryn Mawr College, the University of Pennsylvania, the University of Iowa and the University of Gothenburg in Sweden.

ROBERT CUSHMAN

Robert Cushman is Chairman of the Board of the Norton Company where he served as President and Chief Executive Officer. A graduate of Dartmouth, he has served as an overseer of The Amos Tuck School of Business Administration, among his many civic and business activities. He presently serves on the Massachusetts Board of Regents of Higher Education.

CARL GILBERT

Carl Gilbert is in his eighth year as President of A.I.C.U.M. After graduating from Harvard Law School he joined the firm now called Ropes and Gray. He then joined Gillette as Treasurer and then became President and Chief Executive Officer. He has been a trustee of Tufts Univeristy for many years.

AVRAM J. GOLDBERG

Avram J. Goldberg is President and Chief Executive Officer of the Stop and Shop Companies. He also serves as an associate Trustee of Boston College, as a Fellow of The American Academy of Arts and Sciences, and as a member of the Corporation of the Boston Museum of Science. He is a Director of the Executive Board of the Greater Boston Chamber of Commerce.

GEORGE W. HAZZARD

George W. Hazzard is President Emeritus of Worcester Polytechnic Institute. He is presently serving on the Massachusetts Board of Regents of Higher Education and is a Director of Project QUILL (Quality in Liberal Learning) and Project MAP (Minority Achievement Program) for the Association of American Colleges.

JOSEPH P. HEALEY

Joseph P. Healey, counsel to the law firm of Nasson and Hoban, served as President and Chairman of the Board of Bay Bank Middlesex. He has also served as Chairman of the Board of Trustees of the University of Massachusetts and as a member of the faculty at Boston College Law School.

JACOB HIATT

Jacob Hiatt, President of Rand-Whitney Corporation, is a graduate of the University of Lithuania and Clark University. He serves as a Trustee of Brandeis University, of the College of the Holy Cross, of the Tri-College Board, and as a Life Trustee of Clark University.

ELIZABETH KENNAN

Elizabeth Kennan has served as President of Mount Holyoke College since 1978. Before that she served as an Associate Professor of History at Catholic University of America where she was Director of the Medieval and Byzantine Studies Program. She serves on the Council on Foreign Relations and is Chairman of the Commission on Governmental Relations of the American Council on Education.

DAVID C. KNAPP

David C. Knapp has been the President of the University of Massachusetts system since 1978. Prior to that he served as Profost of Cornell University. He has also served as Dean of the New York State College of Human Ecology at Cornell and as Director of the Institute of College and University Administrators of the American Council on Education.

RODERICK M. MACDOUGALL

Roderick M. MacDougall serves as Chairman and Chief Executive Officer of the Bank of New England Corporation and the Bank of New England. A graduate of Harvard, his educational activities include service as a trustee of Northeastern, member of the Corporation of Babson, and former President of Tri-Lateral Council for Quality Education.

DOROTHY MARSHALL

Dorothy Marshall is a Commonwealth Professor emeritus at U/Mass Boston. Her academic fields of interest are Political Science-Latin America, and Spanish. She is a former trustee of Holy Cross College, a former trustee and Chairman of the Board of Smith College, currently serves as trustee of Bryn Mawr College, Charlestown Savings Bank, the Ford Foundation, Pan American Society of New England and Northfield/Mt. Herman School.

HAROLD T. MILLER

Harold T. Miller is Chairman, President, and Chief Executive Officer of Houghton Mifflin Company, a Boston-based publishing firm. He is a trustee of Franklin and Marshall College and Babson College, and a council member of the American Antiquarian Society. Mr. Miller is also a director of the New England Merchants National Bank and its holding compnay, New England Merchants Company, Inc., and SCA Services, Inc.

COLEMAN M. MOCKLER, JR.

Mr. Mockler is Chairman of the Board and Chief Executive Officer of the Gillette Company. He is also a director of First National Boston Corporation, the First National Bank of Boston, John Hancock Mutual Life Insurance Company, Raytheon Company and Fabreeka Products Company, as well as Chairman of the Corporation of Simmons College.

FRANKLIN PATTERSON

Franklin Patterson is the Director of the Center for Policy Studies and Boyden Professor of the University at U/Mass-Boston. A political scientist, he has taught at NYU, Tufts, Hampshire, and the University of Massachusetts. He directed the Lincoln Filene Center at Tufts, was the founding President of Hampshire 1966-71, and Board Chairman there 1971-74, and has served several educational institutions as trustee. A former secretary of the University of Massachusetts, he was interim president of that institution in 1978.

DAVID B. PERINI

David B. Perini is Chairman, President and Chief Executive Officer of Perini Corporation. He is a graduate of Holy Cross College and Boston College Law School. He serves as a Trustee of Holy Cross and is a member of the Boards of State Street Boston Corporation, the Boston Council, Boy Scouts of America, and a corporator of New England Deaconess Hospital and Wentworth Institute of Technology.

EDWARD E. PHILLIPS

Edward E. Phillips, Chairman of the Board and Chief Executive Officer of the New England Mutual Life Insurance Company, is a graduate of Amherst College and Harvard Law School. He is a Trustee of Amherst College, The New England Aquarium and The New England Conservatory. He has also served on the State Board of Education.

HERBERT ROTH, JR.

Herbert Roth, Jr., is Chairman of the Board and President of LFE Corporation. Prior to his election as President he served as President of the Anelex Corporation. A graduate of the U.S. Military Academy, Mr. Roth is an Honorary Vice-President of the Greater Boston Chamber of Commerce.

KENNETH G. RYDER

Kenneth G. Ryder is the fourth President of Northeastern University. Prior to his election as President he served as Executive Vice-President. A graduate of Boston University, he has served as Chairman of the Executive Committee of A.I.C.U.M., as a member of the National Commission on Student Financial Assistance, as President of the National Committee of Urban Program Universities, and as Vice-Chairman of the National Commission for Cooperative Education.

HAROLD E. SHIVELY

Harold E. Shively is the founding President of Bunker Hill Community College in Boston, Massachusetts. He was also the founding President of North Shore Community College in Beverly, Massachusetts. An educational consultant, President Shively has worked with governments of many countries including Argentina, Venezuela, Israel, England, Surinam and Jamaica. He is Vice President of the Community Colleges Cooperative for International Development, Inc.

FRANK A. TREDINNICK, JR.

Frank A. Tredinnick, Jr., Executive Director of A.I.C.U.M., is in his 28th year as a teacher or administrator in higher education. His many posts have included service as a Vice President of Simmons College, Vice President of Tufts University, and as the first Director of the New England College Fund. He also headed the Regional Accrediting Association and the New England Association of Schools and Colleges.

ROBERT C. WOOD

Robert C. Wood, a political economist, is a Professor of Political Science at the University of Massachusetts at Boston. Formerly he has served as Superintendent, Boston Public Schools; President, University of Massachusetts; and Undersecretary and Secretary, U.S. Department of Housing and Urban Development. He is a Trustee of the College Board and Chairman of the 20th Century Fund Task Force on Federal Role in Public Education.

GUEST AUTHOR

Ernest A. Lynton is Commonwealth Professor of the University of Massachusetts and Senior Associate of its Center for Studies of Policy and the Public Interest at Boston. His current professional interest in policy issues of higher education represents the third phase of his academic career. For many years he was engaged in research in experimental low temperature physics as a faculty member at Rutgers University. From this he moved into academic administration in response to the opportunity of creating a new college at Rutgers. He served for eight years as the founding dean of Livingston College, and then came to the University of Massachusetts as the Senior Vice President for Academic Affairs of the system, a position from which he resigned in 1980.

Dr. Lynton is currently Vice Chairman of the Executive Committee of the Urban Division of the National Association of State Universities and Land Grant Colleges. Over the years he has been a consultant to the Ford Foundation, to the NSF, the National Academy of Sciences, FIPSE and several colleges, and has chaired many visiting teams in connection with the accreditation of colleges and universities in several parts of the country.

His current work on the role of academic institutions in corporate education is supported by the Ford Foundation and is part of a broader study of changes needed to make higher education more responsive to societal needs.